

## REMARKS

Claims 1-37 are pending in the application. Claims 1, 14, 26 and 35 are independent. By the foregoing Amendment, claims 1, 10, and 14 have been amended. These changes are believed to introduce no new matter and their entry is respectfully requested.

### Rejection of Claims 14 and 16 Under 35 U.S.C. §102(b)

In paragraph 3 of the Office Action, the Examiner rejected claims 14 and 16 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,579,327 to Ohtateme et al. (hereinafter “Ohtateme”). A claim is anticipated only if each and every element of the claim is found, either expressly or inherently, in a reference. (MPEP §2131 *citing Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628 (Fed. Cir. 1987)). The identical invention must be shown in as complete detail as is contained in the claim. *Id. citing Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989)). Applicants respectfully traverse the rejection.

Claim 14 recites in pertinent part “a base; an integrated structure operatively coupled to the base, having a front facet and a substantially non-reflective rear facet optically coupled via a waveguide passing therethrough, the integrated structure further including: a gain section to emit a plurality of photons in response to a first electrical input, having a facet defining the rear facet of the integrated structure; a phase control section disposed adjacent to the gain section, to modulate an optical path length of a portion of the waveguide passing through the control section in response to a second electrical input; the phase control section having; a partially-reflective mirror, optically coupled to the portion of the waveguide passing through the phase control section; **a modulator section** disposed adjacent to the phase control section, to modulate an optical output passing through a portion of the waveguide passing through the modulator section in response to a third electrical input, and having a facet defining the front facet of the integrated structure; a reflective element, operatively coupled to the base and disposed opposite the substantially non-reflective rear facet to form an external cavity; and a tunable filter including at least one optical element operatively coupled to the base and disposed in the external cavity” (emphasis added).

In the Office Action, the Examiner states that Ohtateme discloses a tunable laser having an integrated structure having a front facet and a substantially non-reflective rear facet optically coupled via a waveguide passing therethrough because a waveguide is an inherent feature of such semiconductor lasers for guiding light through the structure. The Examiner states further that the structure has a gain section to emit a plurality of photons in response to a first electrical input and having a facet defining the rear facet of the integrated structure, a phase control section disposed adjacent to the gain section to modulate the optical path length of a portion of the waveguide passing therethrough in response to a second electrical input, the phase control section having a partially-reflective mirror optically coupled to the portion of the waveguide passing through the phase control section, and a reflective element/tunable filter disposed opposite the non-reflective rear facet. The Examiner also states that it is believed inherent that all of these elements are coupled to this base. Applicants respectfully disagree.

Applicants respectfully submit that Ohtateme fails to teach the identical invention as claimed in claim 14. For example, Ohtateme fails to teach “a modulator section disposed adjacent to the phase control section, to modulate an optical output passing through a portion of the waveguide passing through the modulator section in response to a third electrical input, and having a facet defining the front facet of the integrated structure” as recited in claim 14. Thus Ohtateme fails to anticipate claim 14 and claim 14 is therefore patentable over Ohtateme.

Claim 16 properly depends from claim 14, which Applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claim 16 is patentable for at least the same reasons that claim 14 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 14 and 16.

#### Rejection of Claims 14 and 16 Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 14 and 16 under 35 U.S.C. §103(a) as being unpatentable over Ohtateme. To establish a *prima facie* case of obviousness, an Examiner must show that there is some suggestion or motivation to modify a reference to arrive at the claimed invention, that there is some expectation of success, and that the cited reference teaches

each and every element of the claimed invention. (MPEP §2143.) *citing In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Applicants respectfully traverse the rejection.

Applicants respectfully submit that Ohtateme fails to teach each and every element claimed in claim 14. For example, Ohtateme fails to teach “a modulator section disposed adjacent to the phase control section, to modulate an optical output passing through a portion of the waveguide passing through the modulator section in response to a third electrical input, and having a facet defining the front facet of the integrated structure” as recited in claim 14. Thus Ohtateme fails to render claim 14 obvious and claim 14 is therefore patentable over Ohtateme.

Claim 16 properly depends from claim 14, which Applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claim 16 is patentable for at least the same reasons that claim 14 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988))). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 14 and 16.

Rejection of Claims 1, 3-5, 7, 9, 13-14, 18, 26, 28, 30-31, and 35 Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 1, 3-5, 7, 9, 13-14, 18, 26, 28, 30-31, and 35 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,295,308 B1 to Zah et al. (hereinafter “Zah”) in view of U.S. Patent No. 6,137,814 to Brosson et al. (hereinafter “Brosson”). Applicants respectfully traverse the rejection.

Representative claim 1 recites in pertinent part “an integrated structure operatively coupled to the base, having a front facet and a substantially non-reflective rear facet optically coupled via **a waveguide passing therethrough**, the integrated structure further including: a gain section to emit a plurality of photons in response to a first electrical input, having a facet defining the rear facet of the integrated structure; a phase control section disposed adjacent to the gain section, to modulate an optical path length of a portion of **the waveguide passing through the phase control section** in response to a second electrical input; the phase control section having; a partially-reflective mirror, optically coupled to the portion of the waveguide passing through the phase control section; a modulator section disposed adjacent to the phase control section, to

modulate an optical output passing through a portion of *the waveguide passing through the modulator section* in response to a third electrical input, and having a facet defining the front facet of the integrated structure; a reflective element, operatively coupled to the base and disposed opposite the substantially non-reflective rear facet to form an external cavity; and a tunable filter including at least one optical element operatively coupled to the base and disposed in the external cavity” (emphasis added).

In the Office Action, the Examiner states that Zah discloses an apparatus comprising an integrated structure having a front facet and rear facets having a waveguide passing therethrough because a waveguide is an inherent feature of such semiconductor lasers for guiding light through the structure. The Examiner states further that the structure has a gain section to emit a plurality of photons in response to a first electrical input and having a facet defining the rear facet of the integrated structure, a modulator section disposed to modulate the optical path length of a portion of the waveguide passing through the modulator in response to an electrical signal, and having a facet that defines the front facet of the structure, a partially reflective mirror disposed between the gain section and the modulator section. Applicants respectfully disagree.

Applicants respectfully submit that the Examiner has failed to meet the burden of showing that it is inherent in Zah that a phase control section and a modulator section share a common waveguide as a coupling mechanism. To establish inherency, an Examiner must provide rationale or evidence tending to show inherency. MPEP §2112 IV. If relying on extrinsic evidence, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. (MPEP §2112IV *citing In re Oelrich*, 666 F.2d 578, 581-582 (CCPA 1981)). If relying on rationale, an Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art (emphasis in original). (MPEP §2112IV *citing Ex parte Levy*, 17 USPQ.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)).

It appears that the Examiner is relying on “rationale” to show that it is inherent in Zah that a phase control section and a modulator section share a common waveguide as a coupling

mechanism when the Examiner asserts that it is inherent because a waveguide is an inherent feature of such semiconductor lasers. Applicant respectfully submits that this rationale is faulty. For example, a modulator section typically does not share a waveguide with other components in a tunable laser. Light is generally coupled to the modulator portion via lenses and sometimes through other components. Thus it does not necessarily flow that the modulator would share a common waveguide with the phase control section or any other component in the tunable laser. Accordingly, Applicants respectfully submit that the Examiner has failed to meet the burden of showing that a phase control section and a modulator section share a common waveguide as a coupling mechanism as included in claim 1 is inherent in Zah and therefore has not shown where Zah teaches a phase control section and a modulator section share a common waveguide as a coupling mechanism.

Applicants respectfully submit further that Brosson fails to make up for this deficiency. That is, Brosson fails to teach a modulator sharing a common waveguide with a phase control section or any other component in a tunable laser. Accordingly, the combination of Zah in view of Brosson fails to teach or fairly suggest each and every element of claims 1, 14, 26, and 35 and thus claims 1, 14, 26, and 35 are patentable over Zah in view of Brosson.

Claims 3-5, 7, 9, and 13 properly depend from claim 1, which Applicants respectfully submit is patentable. Claim 18 properly depends from claim 14, which Applicants respectfully submit is patentable. Claims 28 and 30-31 properly depend from claim 26, which Applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claims 3-5, 7, 9, and 13 are patentable for at least the same reasons that claim 1 is patentable, claim 18 is patentable for at least the same reasons that claim 14 is patentable, and claims 28 and 30-31 are patentable for at least the same reasons that claim 26 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988))). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 1, 3-5, 7, 9, 13-14, 18, 26, 28, 30-31, and 35.

Rejection of Claims 2, 6, 15, and 25 Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 2, 6, 15, and 25 under 35 U.S.C. §103(a) as being unpatentable over Zah in view of Brosson in further view of U.S. Patent Application No. 2002/0131466 A1 to Salavatore et al. (hereinafter “Salvatore”). Applicants respectfully traverse the rejection.

Claims 2 and 6 properly depend from claim 1, which Applicants respectfully submit is patentable. Claim 15 properly depends from claim 14, which Applicants respectfully submit is patentable. Claim 25 properly depends from claim 26, which Applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claims 2 and 6 are patentable for at least the same reasons that claim 1 is patentable, claim 15 is patentable for at least the same reasons that claim 14 is patentable, and claim 25 is patentable for at least the same reasons that claim 26 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988))). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 2, 6, and 15.

Rejection of Claims 8, 17, and 29 Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 8, 17, and 29 under 35 U.S.C. §103(a) as being unpatentable over Zah in view of Brosson in further view of U.S. Patent No. 6,822,981 B2 to Jacquet et al. (hereinafter “Jacquet”). Applicants respectfully traverse the rejection.

Claim 8 properly depends from claim 1, which Applicants respectfully submit is patentable. Claim 17 properly depends from claim 14, which Applicants respectfully submit is patentable. Claim 29 properly depends from claim 26, which Applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claim 8 is patentable for at least the same reasons that claim 1 is patentable, claim 17 is patentable for at least the same reasons that claim 14 is patentable, and claim 29 is patentable for at least the same reasons that claim 26 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988))). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 8, 17, and 29.

Rejection of Claims 10-12 and 19-21 Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 8, 17, and 29 under 35 U.S.C. §103(a) as being unpatentable over Zah in view of Brosion in further view admitted prior art. Applicants respectfully traverse the rejection.

Claims 10-12 properly depend from claim 1, which Applicants respectfully submit is patentable. Claims 19-21 properly depends from claim 14, which Applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claims 10-12 are patentable for at least the same reasons that claim 1 is patentable and claims 19-21 are patentable for at least the same reasons that claim 14 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988))). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 10-12 and 19-21.

Rejection of Claims 22-24 Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 22-24 under 35 U.S.C. §103(a) as being unpatentable over Ohtateme in view of admittor prior art. Applicants respectfully traverse the rejection.

Claims 22-24 properly depend from claim 14, which Applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claims 22-24 are patentable for at least the same reasons that claim 14 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988))). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 22-24.

Rejection of Claims 27, 32-34, and 36-37 Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 8, 17, and 29 under 35 U.S.C. §103(a) as being unpatentable over Zah in view of Brosion in further view of U.S. Patent Application No. 2002/0172239 A1 to McDonald et al. (hereinafter "McDonald"). Applicants respectfully traverse the rejection.

Claims 27 and 32-34 properly depend from claim 26, which Applicants respectfully submit is patentable. Claims 36-37 properly depend from claim 35, which Applicants respectfully submit is patentable. Accordingly, Applicant respectfully submits that claims 27 and 32-34 are patentable for at least the same reasons that claim 26 is patentable and claims 36-37 are patentable for at least the same reasons that claim 35 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988))). Accordingly, Applicant respectfully requests that the Examiner reconsider and remove the rejection to claims 27, 32-34, and 36-37.

### CONCLUSION

Applicant submits that all grounds for rejection have been properly traversed, accommodated, or rendered moot and that the application is now in condition for allowance. The Examiner is invited to telephone the undersigned representative if the Examiner believes that an interview might be useful for any reason.

Respectfully submitted,

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